

## Rules as Classes of Verbal Behavior: A Reply to Glenn

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The current working definition of rule-governed behavior is that it is behavior under the control of verbal antecedents (cf. Skinner, 1969). It is a working definition in the sense that on-going research continues to explore the properties of this class of behavior. For example, the shaping of verbal behavior that describes contingencies may be less effective in controlling a speaker's subsequent non-verbal behavior than the shaping of verbal behavior that describes the nonverbal behavior itself (Matthews, Catania, & Shimoff, 1985). This finding imposes limits on the relevance of some definitions of rule-governed behavior, such as those suggesting that verbal productions can be regarded as rules only if they specify contingencies.

Glenn (1987) proposes criteria for defining rules that are inconsistent with the view that our technical definitions should be shaped by our interactions with our subject matter in the laboratory. In particular, Glenn (1987, p. 30) argues that rules "must be identifiable independent of the behavior which they control" or, in other words, that "they be identifiable as rules before their function in given behavioral relations is ascertainable."

If such criteria were imposed on the definition of reinforcers, the results of almost all published basic and applied research on reinforcement contingencies would be negated. Reinforcers are identified primarily by their effects on behavior, and even attempts to predict the reinforcing effects of stimuli independently of those behavioral effects turn to the behavioral effects for their validation (as in predicting reinforcers from the correlation between reinforcement effects and the relative probabilities of reinforced responses and responses occasioned by the reinforcer: e.g., Premack, 1962).

The distinction between subjective and objective is more consistent with the views

of methodological behaviorism than with those of radical behaviorism. These criteria seem to be derived from the categories of traditional philosophies of science rather than from those implicit in a behavioral treatment that applies its own terms to the behavior of the scientist. For example, Glenn (1987, p. 30) speaks of rules as "objective events," implying the methodological distinction between objective and subjective that was rejected by Skinner (1945) in his critique of operationalism.

The requirement of objectivity raises difficulties for Glenn's proposition that the origins of a stimulus must enter into the judgment of whether the behavior controlled by that stimulus can be regarded as rule-governed. According to Glenn (1987, p. 30), a verbal stimulus must be the result of verbal behavior. Thus, "the sounds produced by a verbal summator are not verbal stimuli, even though they may evoke responses in a listener," and therefore "any behavior they evoked would not be rule-governed." Yet if a listener behaved identically to the sounds produced by a human speaker and the sounds produced by a device, what reason would there be to treat the former behavior as rule-governed and the latter as not, especially when both are products of the same history? The origins of stimuli may be but are not necessarily correlated with their physical properties, and if organisms thereby fail to discriminate among stimulus origins, how can these properties be regarded as objective?

Elsewhere, Glenn (1987, p. 29) states that

the term "rule-governed behavior" implies that the independent variable is inferred from the behavior to be explained by it, whereas good scientific practice requires that independent variables be independently identifiable.

Yet explanation too is at best an informal

category of a behavioral philosophy of science, because it cannot be prior to the behavior analyst's discriminations among the classes of events that make up our behavioral taxonomy (e.g., Catania, 1983).

In distinguishing among kinds of technical terms in a behavioral account, Glenn (1987, p. 29) appeals to whether terms can "tact instances of observable objects (or events)" such as stimuli within an experimental setting:

As an independent variable in an experimental analysis of behavior the term "rule" is in a class with the term "red light." The verbal responses "red light" and "rule" are not in a class with the responses "discriminative stimulus," "conditioned stimulus" or "reinforcer."

Yet each of these terms might be under the control of (tact) properties of the stimuli within an experimental setting.

Whether an experimenter is discussing red lights in general or the specific red light that occasions a particular peck by a particular pigeon in a particular experiment, the response "red" is controlled by a range of stimuli determined by the practices of a verbal community. It does not depend on so-called objective physical measures, first because those measures also depend on the discriminative behavior of an observer, and second because no range or distribution of wavelengths can be specified such that all visual stimuli within the range are called red and all those outside are not (cf. Catania, 1984, p. 232). We need not specify measurable physical dimensions of the controlling stimuli before we can speak of stimulus control.

The same points hold for "discriminative stimulus," except that the practices of behavior analytic communities determine control based on the relations of stimuli to behavior. Discriminations based on relations among stimuli do not require a new formulation of stimulus control (e.g., consider "to the left of"). Thus, just as an experimenter may discuss the visual properties of an array of lights within an experimental chamber, the experimenter may discuss the behavioral properties of those lights. The discussion may be in terms of discriminative stimuli in general or in terms of the specific stimulus that occasions a particular peck by a particular pigeon in a particular experiment. In this view, the crucial difference between "red

stimulus" and "discriminative stimulus" lies only in the relational complexity of the controlling stimulus.

Distinguishing between classes and specific instances is crucial to behavior analysis, but in our technical vocabulary the distinction is only rarely as explicit as it is in the terms "response" and "operant." More often the same term serves for both class and specific instance. Abstraction operates not only for single stimulus properties, such as those designated as color and form and size, but also for the more complex relational features of stimuli that we have learned to tact in the laboratory, such as those designated as discriminative or reinforcing or eliciting.

Our concern in the study of rule-governed behavior is with the controlling effects of verbal antecedents, and we should therefore not be distracted by topographical properties of verbal stimuli, such as whether they have the form of propositions about contingencies. Just as we do not call a stimulus discriminative if it has no behavioral effect on an organism, we should not call a verbal antecedent a rule if it has no behavioral effect on a listener. Our task then becomes one of defining rules in terms of what makes them effective in controlling behavior. And if it then happens that someone stops upon seeing the word "stop" in a pattern created by leaves in the wind, we shall have no trouble in relating that behavior to the individual's history with respect to verbal stimuli, and we might even find it useful to call the behavior rule-governed.

## REFERENCES

- Catania, A. C. (1983). Behavior analysis and behavior synthesis in the extrapolation from animal to human behavior. In G. Davey (Ed.), *Animal models of human behavior* (pp. 51-69). Chichester: Wiley.
- Catania, A. C. (1984). *Learning* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Glenn, S. S. (1987). Rules as environmental events. *The Analysis of Verbal Behavior*, 5, 29-32.
- Mathews, B. A., Catania, A. C., & Shimoff, E. (1985). Effects of uninstructed verbal behavior on nonverbal responding: Contingency descriptions versus performance descriptions. *Journal of the Experimental Analysis of Behavior*, 43, 155-164.
- Premack, D. (1962). Reversibility of the reinforcement relation. *Science*, 136, 255-257.
- Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review*, 52, 270-277, 291-294.
- Skinner, B. F. (1969). An operant analysis of problem solving. In B. F. Skinner, *Contingencies of reinforcement* (pp. 133-171). New York: Appleton-Century-Crofts.